

WHAT IS CLAIMED IS:

1. A fluorescence microscope having at least one exchangeable filter insert (12) and at least one illumination device (1) having at least one light source (22),
5 wherein the filter insert (12) is coupled by means of a mechanical and/or electrical and/or optical and/or magnetic apparatus (19) to the illumination device (1) so that in the operating state, no excitation illumination occurs in the fluorescence microscope without a filter insert (12) in the working position.
2. The fluorescence microscope as defined in Claim 1, wherein in the operating state,
10 current delivery to the excitation light source (22) is switchable by means of the mechanical and/or electrical and/or optical and/or mechanical apparatus (19) by insertion or removal of the filter insert (12).
3. The fluorescence microscope as defined in Claim 1, wherein upon insertion of the filter insert (12), a dimmer for the excitation light source (22) is switchable by insertion or
15 removal of the filter insert (12) by means of the mechanical and/or electrical and/or optical and/or magnetic apparatus (19).
4. The fluorescence microscope as defined in Claim 1, wherein upon insertion of the filter insert (12), a shutter (6) for the illumination beam path (2a) is switchable by insertion or removal of the filter insert (12) by means of the mechanical and/or electrical and/or optical
20 and/or magnetic apparatus (19).
5. The fluorescence microscope as defined in Claim 4, wherein in the operating state the shutter (6) is switchable by means of an electric motor (9) or electromagnet.
6. The fluorescence microscope as defined in Claim 5, wherein in the operating state the shutter (6) can be opened and held open by means of the electric motor (9) or electromagnet
25 only when the electrical circuit necessary therefor is closed by the apparatus (19).

7. The fluorescence microscope as defined in Claim 2, wherein in the event of a power failure at the microscope, current delivery to the excitation light source is automatically switched off.
8. The fluorescence microscope as defined in Claim 3, wherein in the event of a power failure at the microscope, the dimmer for the excitation light source is automatically switched on.
9. The fluorescence microscope as defined in Claim 4, wherein in the event of a power failure at the microscope, the shutter (6) is automatically closed.
10. The fluorescence microscope as defined in Claim 4 or 9, wherein the shutter (6) is closable by the force [(F)] of a spring (7).
11. The fluorescence microscope as defined in Claim 4 or 9, wherein the shutter (6) is closable by the force of gravity.
12. The fluorescence microscope as defined in Claim 4 or 9, wherein the shutter (6) is closable by means of elastic materials.
13. The fluorescence microscope as defined in Claim 4 or 9, wherein the shutter (6) is closable by magnetic force.
14. The fluorescence microscope as defined in one of Claims 4 through 6, wherein the shutter (6) is embodied as a rotary slide.
15. The fluorescence microscope as defined in one of Claims 4 through 6, wherein the shutter (6) is embodied as a linear mechanical stop or as a rotary mechanical stop.
16. The fluorescence microscope as defined in one of the foregoing claims, wherein different filter inserts (12) are arranged on a changeable filter carrier, e.g. a filter turret (11).
17. The fluorescence microscope as defined in Claim 16, wherein different filter inserts (12) can be brought into the working position by manual or motorized switching of the changeable filter carrier (11).

18. The fluorescence microscope as defined in one of the foregoing claims, wherein a filter insert (12) is constituted from a combination of several individual filters (13, 14).
19. The fluorescence microscope as defined in one of the foregoing claims, wherein the filter insert (12) is embodied with at least one switching cam (19) which actuates a sensitive microswitch (20) with a closing function.
20. The fluorescence microscope as defined in one of the foregoing claims, wherein the filter insert (12) is equipped with at least one permanent magnet which, in the operating state, actuates a magnetic switch with a closing function.
21. The fluorescence microscope as defined in one of the foregoing claims, wherein the filter insert (12) is equipped with at least one electrically conductive contact surface which acts, in the operating state, as a switch (20).
22. The fluorescence microscope as defined in one of the foregoing claims, wherein at least one of the filters (13, 14) is equipped with an electrically conductive coating which acts, in the operating state, as a switch (20).
23. The fluorescence microscope as defined in one of the foregoing claims, wherein the filter insert (12) is embodied with at least one optical signal generator which makes the switch (20) switchable.
24. The fluorescence microscope as defined in one of the foregoing claims, wherein the shutter (6) is arranged not in the illumination beam path (2) but in the observation beam path (15).
25. The fluorescence microscope as defined in one of the foregoing claims, wherein it is a stereomicroscope.